

## Appendix A Other Analysis Issues

### INTRODUCTION

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The National Environmental Protection Act (NEPA) provides for the identification and elimination from detailed study the issues which are not significant or which have been covered by prior environmental review. This narrows the discussion of these issues to a brief presentation of why they will not have a significant effect on the human environment or providing a reference to their coverage elsewhere (40 CFR 1501.7(3)). While these concerns are important, they were either unaffected or mildly affected by the proposed action, or the effects could be adequately mitigated.

Following is the list of issues analyzed but not found to be significant factors in the decision for this project:

- Sensitive plant species, wildlife and their habitat
- Heritage Resources
- Energy Efficiency
- Cost Effectiveness
- Compatibility with current land uses during and after construction.

**Sensitive plant species, wildlife and their habitat: Effects to wildlife and plant species and habitat, including threatened, endangered and sensitive species, management indicator species and migratory birds.**

**Indicator:** Impacts to wildlife species were first evaluated by assessing whether suitable habitat exists within the immediate project area to be affected. It was determined that many species would not be addressed further in this analysis. For lynx, estimated quantitative factors relative to habitat change; e.g. loss of denning/ foraging habitat, etc. were analyzed. Other species (gray wolf, bald eagle, elk, wolverine) were analyzed using qualitative factors such as potential for displacement or direct loss of habitat.

**Concern:** Removal of vegetation that constitutes a variety of habitat conditions supporting a species life history (foraging, denning/ nesting, hiding cover) can result in deleterious effects. Disruptions associated with human activities can also disturb and/or displace wildlife.

### Introduction

The Shields River Road Upgrade project area is located on the west flank of the Crazy Mountains approximately 20 miles northeast of Wilsall, Montana. The area includes the main Shields River drainage below the Forest boundary to just

within the Forest boundary (proposed winter/ spring parking area), the lower Sunlight Creek drainage (proposed gravel pit site), and the proposed wetland mitigation site. While there were no specific comments from the public concerned with the effects of the Shields River Road Upgrade proposal on wildlife populations or habitats, there are laws, policies and direction applicable to wildlife habitat considerations relative to resource management on National Forest lands. These include:

1. The Endangered Species Act (ESA) of 1973 mandates that the effects of land uses and management activities be evaluated as part of the biological assessment (BA) process for listed species. Provisions of the Endangered Species Act require that federal agencies insure that their actions are not likely to jeopardize the existence of species federally listed as "threatened" or "endangered". The BA is summarized in this section and can be found in the project file.
2. The National Forest Management Act (NFMA) of 1976 requires that the US Forest Service maintain sufficient habitat to sustain viable populations of native species (see 4 below).
3. The National Environmental Policy Act (NEPA) of 1969 requires an assessment of the impacts of human activities upon the environment.
4. Forest Service Manuals (FSM 2670) provide policy under which Forest Service projects are designed to maintain viable populations of sensitive species. Sensitive species are those animal species identified by the Regional Forester for which population viability is a concern as evidenced by a significant current or predicted downward trend in population numbers, density, or in habitat capability that will reduce a species' existing distribution (FSM 2670.5.19). Protection of sensitive species and their habitats is a response to the mandate of the National Forest Management Act (NFMA) to maintain viable populations of all native and desired non-native vertebrate species (36 CFR 219.19). In accordance with the Forest Plan, a biological evaluation (BE) must be completed prior to implementation of activities that have the potential to effect sensitive species. As part of Forest Service Region 1 streamlining policy (August 17, 1995), we are no longer required to produce a "stand alone" biological evaluation for sensitive species. Effects of the proposal to sensitive animal species are therefore only disclosed in this section.
5. The Gallatin Forest Plan directs that habitat is provided for identified management indicator species and those native indigenous species that use special or unique habitats. Effects of the proposal to management indicator animal species, big game, and other non-game species are addressed in this EA. The Forest Plan also provides specific direction for

management of wildlife habitat by various management emphasis areas (MAs). The proposed road improvements, winter/ spring parking area and gravel pit would occur within MA 8 – Timber Management. A description of this MA was given in Chapter 1, Section VI, Relationship to the Gallatin National Forest Plan.

6. Finally, Migratory bird species are protected from harm under the Migratory Bird Treaty Act (16 USC 703-711). A January 2001 Executive Order requires federal agencies to ensure that environmental analyses of federal actions evaluate the effects of actions and agency plans on migratory birds, with emphasis on species of concern.

### **Species Considered**

It is unrealistic to individually analyze every species that may be present within the defined analysis areas. Therefore, for the purpose of this project, threatened, endangered, and sensitive, as well as other identified species, are analyzed to represent those that utilize similar habitats. Relative to the above requirements, the species that were considered are displayed in the following table. The species that will be further addressed in this EA include those species listed as threatened and endangered (Gray wolf, bald eagle, and Canada lynx), which will be fully analyzed in the BA with a summary in the EA. Other species to be addressed include wolverine (sensitive), elk (MIS), and migratory birds.

Two levels of analysis were considered in determining effects to species. The landscape level area consists of the entire upper Shields drainage or project “vicinity”. The site-specific area of influence or “project area” includes the road right-of-way (ROW), proposed winter/ spring parking area, gravel pit, and wetland mitigation site. Since the Shields River road exists today, and the upgrade work will continue to exist in its present ROW, no in-depth analysis was done for the road improvement work itself. The analysis for terrestrial species concentrates on the proposed new disturbance and was based on the predicted effects of these disturbances on the appropriate analysis area for the individual species.

The Shields River Road Upgrade project area does not provide suitable habitat, or will not effect habitat for, the peregrine falcon, Northern goshawk, trumpeter swan, harlequin duck, flammulated owl, black-backed woodpecker, or Townsend’s big-eared bat so these species are not addressed in this EA for potential impacts from the proposed project. Habitat for other MIS such as the pine marten and goshawk would not be impacted by this proposal and also were not analyzed.

**Table A-1. Animal Species Considered for Shields Road Upgrade project.**

<b>Species</b>	<b>Summary of Conclusion of Effects</b>
Gray Wolf (non-essential experimental)	No effect; potential resident/migrant. There will be no impact to prey base, potential denning or rendezvous sites, or open road density. See below and BA for further discussion.
Bald Eagle (threatened and management indicator species)	No effect; no known nests or project activity would not affect habitat. See below and BA for further discussion.
Canada Lynx (threatened)	May effect, not likely to adversely affect; the project is within identified potential habitat. Approximately 6 acres of habitat would move to unsuitable habitat. See below and BA for further discussion.
Peregrine falcon (sensitive)	No impact; no suitable habitat within the project area. No cliffs or potential hack sites in the vicinity. Not addressed further.
Wolverine (sensitive)	No impact; known to exist in a variety of habitat types. This project would not impact foraging or denning habitat to a measurable degree. See below for further discussion.
Townsend's Big-eared bat (sensitive)	No impact; there may be suitable habitat within the vicinity but will not be affected by the proposed activity. Bats may use tree bark for roosting; foraging opportunities exist. Not addressed further.
Flammulated Owl (sensitive)	No impact; very limited habitat within the vicinity. Forested cover is primarily early successional lodgepole pine. Not addressed further.
Northern Goshawk (sensitive and management indicator species)	No impact; suitable habitat for goshawk in over-mature Forest adjacent to project area where there is a diversity of Forest and grassland conditions that provide suitable nesting and foraging habitat. Not addressed further.
Trumpeter Swan (sensitive)	No impact; no suitable habitat within the project area. Not addressed further.
Harlequin Duck (sensitive)	No impact; no suitable habitat within the project area. Not addressed further.
Black-backed Woodpecker (sensitive)	No impact; no burned or substantial amounts of dead trees providing snags for nesting and feeding in the project area. Not addressed further.
Boreal Toad (sensitive)	May impact individuals or habitat, but will not likely contribute to a trend towards Federal listing or cause a loss of viability to the population or species (MIIH); potential habitat exists in existing road ROW. See below for further discussion.
Northern Leopard Frog (sensitive)	May impact individuals or habitat, but will not likely contribute to a trend towards Federal listing or cause a loss of viability to the population or species (MIIH); potential habitat exists in existing road ROW. See below for further discussion.
Elk (management indicator species)	Vicinity of project area provides habitat for spring, fall, and in some years, winter range. See below for further discussion.
Pine marten (management indicator species)	No suitable habitat within the project area. Not addressed further.

Table 2 lists those plants currently listed as sensitive species on the Gallatin National Forest. No sensitive plants have been found in other surveys in the Crazy Mountains, and it is probable that none occur in the project area either. Past surveys, along with the history of existing and past disturbances, were considered to determine that road upgrade activity in this project area would

have “no impact” on sensitive plant species suspected or known to occur on the Gallatin National Forest and will not be further addressed.

**Table A-2. Plant Species Considered for Shields Road Upgrade project.**

<b>Species</b>	<b>Presence on GNF</b>	<b>Habitat</b>
<i>Adoxa moschatellina</i> (musk-root)	Suspected	forest, moist mossy slopes, rock crevices, boulders
<i>Aquilegia brevistyla</i> (short-styled columbine)	Known	open woods and stream banks; on L&C NF found on S/LIBO and DF/LIBO sites and primarily limestone; often northern aspect
<i>Balsamorhiza macrophylla</i> (large-leaved balsamroot)	Known	open hills, bunchgrass habitat
<i>Carex livida</i> (pale sedge)	Suspected	usually found in sphagnum bogs/fens; foothills and mountains; calcareous parent material
<i>Castilleja gracillima</i> (slender paintbrush)	Known	wet meadows and stream banks
<i>Cypripedium parviflorum</i> (small yellow lady's slipper)	Known	bogs, damp, mossy woods, seeps, moist forest-meadow ecotones
<i>Drosera anglica</i> (English Sundew)	Known	occurs with bog related species
<i>Eleocharis rostellata</i> (Beaked spikerush)	Known	Alkaline soils, often near thermal springs
<i>Epipactis gigantea</i> (Giant helleborine)	Suspected	around thermal springs or perennial springs with year round water flow; found in boggy, organic, fens
<i>Eriophorum gracile</i> (Slender cottongrass)	Known	peatland (fen) species
<i>Gentianopsis simplex</i> (Hiker's gentian)	Suspected	mountain bogs, meadows, seeps
<i>Goodyera repens</i> (Northern rattlesnake plantain)	Suspected	open mossy forests; mountains, on L&C NF found primarily in S/LIBO and AF/LIBO habitat types and limestone or occasionally shale
<i>Haplopappus macronema</i> var. <i>macronema</i> (Discoid goldenweed)	Known	rocky, open or sparsely wooded slopes; often in coarse talus at elevations at or above timberline
<i>Juncus hallii</i> (Halls' rush)	Known	moist to dry meadows and slopes; montane to subalpine
<i>Polygonum douglasii</i> spp. <i>austiniae</i> (Austin's knotweed)	Suspected	open, gravelly, often shale-derived soils with eroding slopes and banks; montane zone
<i>Ranunculus jovis</i> (Jove's buttercup)	Known	sage to forested slopes
<i>Salix barrattiana</i> (Barratt's willow)	Known	cold, moist soil; near or above timberline
<i>Salix wolfii</i> var. <i>wolfii</i> (Wolf's willow)	Known	stream banks and wet meadows; montane and subalpine
<i>Shoshonea pulvinata</i> (Shoshonea)	Suspected	open, windswept limestone outcrops, ridgetops and canyon rims in thin, rocky soil; mainly east of the Beartooth Mtns.

Species	Presence on GNF	Habitat
Thalictrum alpinum (Alpine meadowrue)	Suspected	on hummocks w/ shrubs in moist, alkaline meadows; montane and subalpine
Veratrum californicum (California false-hellebore)	Suspected	wet meadows and stream banks; montane and subalpine, alpine meadows; spruce/fir, Doug fir

## Affected Environment

The greater Shields River vicinity provides habitat on both private and public lands for a wide array of wildlife species including songbirds, game birds, raptors, small mammals, Forest carnivores, big game animals, and reptiles and amphibians. The project areas to be impacted by the gravel pit and winter/spring parking area are comprised of past clearcuts with second-growth lodgepole pine approximately 30-50 years old. This relatively homogenous habitat is dry to mesic with an understory of pinegrass, arnica, meadowrue, and bedstraw, and is generally not considered to be optimal habitat compared to undisturbed sites. Nor is this type of habitat unique, as there has been an abundance of past harvest activity within the upper Shields drainage. This portion of the immediate project area is providing potential habitat for lynx and is providing cover and/or forage for a variety of animals that may move through the area.

The project area to be impacted by the road reconstruction includes six areas of wetlands within the existing Shields road ROW totaling approximately 0.469 acres. These wetland areas are providing potential habitat for amphibians. Other habitats available within the larger vicinity of the proposed project exist within the Shields and Sunlight drainages, including additional past harvest units of various age classes, Douglas fir and spruce-fir forested areas, interspersed meadows and grasslands, and riparian areas. These habitats provide for many of the species listed above, as well as more common game and non-game species. However, as described above, the analysis is limited to those species that utilize all or a portion of the area impacted by the proposed project activity or for which comprehensive analysis is required.

## Methodology for Analysis

Site visits were made to review the proposal including the actions and their locations proposed for the Shields road upgrade work, the winter/ spring parking area, and the potential gravel pit sites. Suitable habitat conditions for wildlife species were assessed at this time. These field reconnaissance visits were also used to determine the existing vegetative condition within the project area and look for evidence of wildlife use and any special features (e.g. nest sites, den sites, mineral licks, wet sites, wallows, cavity trees, foraging areas, staging

areas, security cover, and travel corridors) that might need protection through mitigation or that would be adversely affected by the proposal.

The proposed wetland mitigation site would provide a slight net increase of wetland/ riparian habitat (Corps of Engineers would require “replacement in kind” (1.5 to 1) wetland replacement with no net loss of wetlands or 0.58 acres on National Forest lands in the Shields River watershed). Therefore, any direct loss of habitat would be mitigated for and is considered a benefit and was not analyzed further except for the amphibian species (boreal toad and northern leopard frog).

No formal wildlife surveys were conducted based on the lack of suitable habitat and/or quality of habitat that exists within the immediate project area. However, Geographic Information System (GIS) data were used to analyze impacts to lynx at the landscape scale pursuant to the Canada Lynx Conservation Assessment and Strategy (CLCAS). Data used for these efforts are typically generated from the Timber Stand Management Record System (TSMRS) database. This analysis is displayed and discussed in the BA, with a summary appearing here.

### **Effects Analysis Parameters**

**Scale of Analysis:** The analysis area for evaluating effects of this project on wildlife species and their habitat was based on known occurrence of those species or for whose habitat is present within the influence of the project, i.e. the road easement corridor through private land, proposed winter/ spring parking area, proposed gravel pit, and associated access and activity. The analysis area for lynx was based on the Shields River Lynx Analysis Unit (LAU). This LAU is comprised of timber stand compartment 222 and 223, an area of about 27,878 acres.

Temporal scale for effects analysis includes the construction activity timeframe, which could begin as early as fall, 2004 and would continue for at least two full years of activity, extending to the fall of 2006. This period allows for consideration of direct impacts caused by the proposed action. Indirect effects of the project are expected to continue after the completion of project implementation.

**Cumulative Effects Parameters:** Cumulative effects assessment requires consideration of past, present and reasonably foreseeable events. Vegetation altering processes can have very long-lasting effects on wildlife habitat. Past impacts to wildlife habitat are reflected in the current baseline vegetation used for analysis of the proposed project. The analysis of potential future actions and events was limited to those activities currently planned, proposed, or contemplated in the analysis area. There is no way to reasonably predict what may occur beyond these known potential events. Further, any future federal actions in the project area that are not being considered at this time, will undergo

a separate analysis, based in part on an understanding of the consequences to wildlife habitat incurred by the currently proposed project.

Past and current activities include livestock grazing, approximately 3,300 acres of timber harvest on private and public lands in the last 40+ years, revegetation of approximately 3,276 acres, changes in patterns of land ownerships due to the Galt land exchange in 1991-1993, road obliteration of approximately 68.5 miles of road after the Galt land exchange, public rental of Bennett Creek Ranger Station, hunting, and year-round recreational activities. Reasonably foreseeable actions include the Gallatin National Forest Travel Management Plan effort, Upper Shields Grazing Allotment Revisions, Bennett Creek Land Exchange, and the Sunlight Trail projects.

### **Effects to Identified Species to Analyze**

There are three threatened and endangered species potentially present in the project area that are federally protected under the Endangered Species Act (ESA). These species include the Canada lynx, bald eagle and gray wolf. Life history information on these species can be found in the reference document "The Distribution, Life History, and Recovery Objectives For Region One Threatened and Endangered Terrestrial Wildlife Species" (2001) and is incorporated by reference in this section and located in the project file. The effects of the proposed project are summarized below; additional information is included in the BA located in the project file. Three sensitive species (wolverine, boreal toad, and northern leopard frog), one management indicator species (elk), and migratory birds will also be further addressed below.

### **Canada Lynx**

**Indicator:** Directions for evaluating federal actions relative to lynx habitat conditions are provided in the Canada Lynx Conservation Assessment and Strategy (CLCAS) (Ruediger et al. 2000). To address compliance with CLCAS habitat standards, effects to Canada lynx were evaluated by assessing project contribution to the proportion of unsuitable lynx habitat and impacts to lynx denning and foraging habitat. The BA provides additional analysis using GIS data queries conducted to analyze impacts to lynx at the landscape scale (see Methodology for Analysis).

### **Affected Environment**

The Canada lynx was listed as a threatened species under the ESA in March 2000. The greater Shields watershed provides habitat for lynx. A Forest-wide lynx habitat analysis was conducted in 2000, which designated existing Lynx Analysis Units (LAUs). The Shields River Road Upgrade project involves one lynx analysis unit, specifically the Shields River LAU. This LAU is comprised of timber stand compartment 222 and 223, an area of about



27,878 acres. Of this, 19,853 acres or 71% of the LAU is considered potential lynx habitat. Much of the unit is in good condition for snowshoe hares due to extensive logging that occurred on former private lands in the 1960s & 70s. The old private logging road network has been mostly obliterated and closed. Unconfirmed track locations were reported (2000) in Bennett and Sunlight drainages, outside the immediate project area.

CLCAS planning standards that apply to the Shields River Road Upgrade project include:

- In the absence of guidance from a broad-scale assessment of landscape patterns, limit disturbance within each LAU as follows: if more than 30 percent of lynx habitat within an LAU is currently in unsuitable condition, no further reduction of suitable conditions shall occur as a result of vegetation management activities by federal agencies (p. 7-3).
- Within a LAU, maintain denning habitat in patches generally larger than 5 acres, comprising at least 10% of lynx habitat. Where less than 10% denning habitat is currently present within a LAU, defer any management actions that would delay development of denning habitat structure (p. 7-4).
- Maintain habitat connectivity within and between LAUs.
- In lynx habitat, ensure that federal actions do not degrade or compromise landscape connectivity when planning and operating new or expanded recreation developments.

Data queries conducted for the Shields River Road Upgrade determined acres of lynx habitat and are shown in Table 3. The amount of unsuitable habitat was estimated using past harvest data. Assuming that all the 3,300 acres of past harvest was not yet providing foraging habitat, approximately 17% of the lynx habitat within the LAU would be considered unsuitable. In reality, this may overestimate the amount of unsuitable habitat within the project vicinity. The majority of these harvested areas have regenerated enough such that they are either providing foraging habitat at this time or don't constitute foraging habitat at all due to their advanced age resulting in inadequate stem density and age class conditions for optimal snowshoe hare habitat. Based on TSMRS GIS queries, only 5% is unsuitable. Calculated either way, the standard of no more than 30% unsuitable acres within a LAU is not exceeded.

There are no specific standards in the CLCAS relative to lynx foraging habitat. However, foraging habitat is an important component of lynx habitat, particularly its distribution relative to available denning habitat. Past harvest activities and natural processes of forest succession have produced the available foraging habitat within the project area. Older forest habitat also provides potential for foraging on alternative prey species such as red

squirrels and grouse. Foraging habitat does not appear to be limiting in this LAU and is relatively well distributed in proximity to available denning habitat.

Denning habitat for the LAUs in the vicinity consists of mature and old growth Douglas fir and lodgepole pine with at least 70% canopy closure, and pole-sized or older spruce/subalpine fir forest with canopy closure of 40% or greater. The CLCAS standard for denning habitat requires maintaining at least 10% denning habitat within the LAU. Based on TSMRS GIS queries, approximately 9,903 acres or 50% of the LAU provides denning habitat. This meets the standard of maintaining at least 10% denning habitat within a LAU.

**Table A-3: LAU Habitat within the Shields River Road Upgrade Project Area**

LAU Name	LAU Total Size	Acres of Lynx Habitat in LAU	Estimated Unsuitable Acres & % of LAU	Number of Acres of Lynx Habitat Disturbed with proposed project and % within LAU
Shields	27878	19,853	3300 and 17% OR 948 and 5% (TSMRS GIS queries)	6 and < .05%

### **Direct/ Indirect/ Cumulative Effects**

#### **Effects Resulting from the Alternative A – Proposed Action with a Gravel Pit On National Forest**

Habitat in the project area and specifically where vegetation removal would take place (proposed trailhead = 1A; proposed gravel site = 5 A) consists of 40-50 year old (30 feet) lodgepole pine. Currently these locations are not providing optimal foraging habitat due to the lack of stem density, nor are they providing denning habitat due to the lack of down woody debris. However, based on habitat types and elevation, these areas are considered suitable lynx habitat and the removal of trees for the purposes described would change these acres to unsuitable. As indicated in Table 3 above, construction of the winter/ spring parking area and gravel pit would result in < .05% to an unsuitable condition.

Alternative A has a very small effect on the proportion of unsuitable lynx habitat within the project vicinity. However, this amount of habitat would remain unsuitable in the long term due to the conversion of habitat acres. The winter/ spring parking area would become a recreational facility and the gravel pit is not expected to revegetate to the point of becoming a forested community. This would preclude the six acres from ever contributing to the total foraging or denning habitat acres within the Shields LAU. However, the

areas are small enough that connectivity among and between habitats will be maintained.

Cumulative effects from the actions identified above (Gallatin National Forest Travel Management Plan effort, Upper Shields Grazing Allotment Revisions, Bennett Creek Land Exchange, and the Sunlight Trail projects) would not result in any changes in unsuitable, denning, or foraging habitat. None of these projects would manipulate vegetation. These projects' effects will be analyzed separately to determine if CLCAS standards would be met.

### **Effects Resulting from the Alternative B – Proposed Action with a Gravel Pit Not on National Forest**

The proposed project direct and indirect effects on foraging habitat and future lynx denning habitat would be similar to Alternative A. The gravel pit would not be located on National Forest land so the amount converted to unsuitable would be only 1 acre with the development of the winter/ spring parking area. This would result in a .005% change to unsuitable acres.

### **Effects Resulting from the Alternative C – No Action**

The No Action Alternative would not directly, indirectly, or cumulatively affect the lynx as a “threatened” species. No acres of existing vegetation would be manipulated to an unsuitable condition and no disturbance or displacement would occur.

## **Bald Eagle**

**Indicator:** Effects to bald eagles were evaluated by assessing project impacts to bald eagle nesting habitat and foraging habitat.

### **Affected Environment**

There are no existing or potential bald eagle nest sites in the project area. Bald eagles may fish or scavenge on animal carcasses from suitable perch trees in the Shields River drainage below the project site on private land during the winter. Past surveys have indicated that winter habitat is marginal from the Forest boundary to about Porcupine Creek except during mild winters. Foraging by bald eagles may be limited due to the lack of fish concentrations, limited use by waterfowl, or frozen river conditions. On the remainder of the survey transect route from Porcupine Creek to the confluence of the Yellowstone, an average of 26 eagles have been counted during the winters of 1994-2002.

## **Direct/ Indirect/ Cumulative Effects**

### **Effects Resulting from the Alternative A – Proposed Action with a Gravel Pit On National Forest**

Since the project area does not provide suitable nesting habitat for bald eagles, there would be no direct, indirect or cumulative effects to bald eagle nesting habitat under any of the project alternatives.

Except for the existing bridge crossing on the Shields River, no activity would occur within 100 feet of the Shields River. The winter/ spring parking area and gravel pit are at an elevation that do not support important ungulate winter range. Therefore, the project would have no direct, indirect or cumulative effects to bald eagle winter foraging habitat.

### **Effects Resulting from the Alternative B – Proposed Action with a Gravel Pit Not On National Forest**

The effects of Alternative B would be similar to those described for Alternative A. The project would have no direct, indirect or cumulative effects to bald eagle nesting or winter foraging habitat.

### **Effects Resulting from the Alternative C – No Action**

This alternative would have no direct, indirect or cumulative effects to bald eagle nesting or winter foraging habitat.

## **Gray Wolf**

**Indicator:** Effects to gray wolves were evaluated by assessing project impacts to known den or rendezvous sites, and impacts to important wolf prey areas such as big game winter range.

### **Affected Environment**

Gray wolves were reintroduced to the Greater Yellowstone Ecosystem in 1995 and 1996 as a non-essential, experimental population under the Endangered Species Act. Since the original animals were released in Yellowstone National Park, they have begun to spread throughout the ecosystem as expected. Habitat is available in the Shields River watershed for wolves and their primary prey, elk. Unconfirmed hair samples were reported (2001) in Smith Creek and the Shields River drainage and tributaries. However, no established wolf packs or denning or rendezvous sites occur in the Crazy Mountains.

## **Direct/ Indirect/ Cumulative Effects**

### **Effects Resulting from the Alternative A – Proposed Action with a Gravel Pit On National Forest**

Since there are no den or rendezvous sites in the Shields River Road Upgrade project area, the project would have no direct, indirect or cumulative effects to these important reproductive sites.

Big game ungulates provide the primary prey species for wolves. The greater project vicinity provides year-round habitat for elk (*Cervus elaphus*), deer (*Odocoileus* spp) and moose (*Alces alces*). Winter ranges for elk and deer are generally found on south and west exposures at lower elevations, below the Forest boundary. Moose are present at low densities throughout the project area in winter.

Forest roads are not considered to have a direct impact on wolves, but high road densities may affect distribution and abundance of wolf prey species. Road densities will not change with the implementation of either of the action alternatives. Key ungulate habitat components; cover, security areas, and road densities would be maintained by this action alternative (refer to Elk discussions).

Cumulative effects to wolf prey species include past vegetation management effects on habitat, and travel management practices. The project area has been heavily managed for timber production in the past, which has resulted in favorable forage conditions for big game species. Road densities have historically been high although watershed restoration projects have resulted in extensive road decommissioning. Continued implementation of Forest Plan big game habitat management standards will provide the necessary prey abundance needed for present or foreseeable future wolf populations. The project would have no substantial direct, indirect or cumulative effects to prey species.

### **Effects Resulting from the Alternative B – Proposed Action with a Gravel Pit Not On National Forest**

The effects of Alternative B would be similar to those described for Alternative A. The project would have no direct, indirect or cumulative effects to wolf denning or rendezvous sites or to prey species.

### **Effects Resulting from the Alternative C – No Action**

This alternative would have no direct, indirect or cumulative effects to wolf denning or rendezvous sites or to prey species.

## **Biological Assessment Determination: Canada Lynx, Bald Eagle, and Gray Wolf**

Direct, indirect or cumulative impacts associated with this proposal “may affect, but is not likely to adversely affect” the Canada lynx. All applicable standards in the CLCAS would be met under all alternatives for the project. Direct, indirect or cumulative impacts associated with this proposal would have “no effect” on the bald eagle and/or its nesting or foraging habitat. The project would have no direct, indirect or cumulative effects to bald eagle winter foraging habitat. Direct, indirect or cumulative impacts associated with this proposal are “not likely to jeopardize the continued existence” of the gray wolf or its habitat. The project would have no direct, indirect or cumulative effects to den or rendezvous sites or to wolf prey species.

### **Wolverine**

**Indicator:** Effects to wolverine were addressed by evaluating project impacts to denning and foraging habitat. Road densities were not considered, as no new roads would be required to implement any of the action alternatives.

### **Affected Environment**

Wolverines are medium sized forest carnivores with a generalist foraging strategy that includes scavenging animal carrion, feeding on berries and insect larvae, as well as direct predation of small, medium and large mammals and birds. Wolverines use high elevations during the summer, winter ranges of big game in the winter and riparian areas during the spring. Mature and intermediate age timber stands with edge appear to be preferred habitats while dense young timber, burns, wet meadows and clear-cuts are rarely used. While wolverines are secretive, extensive travel through forest cover is not unusual.

Since wolverines are basically habitat generalists with an opportunistic foraging strategy, it is difficult to define foraging habitat. Food availability may be the primary factor in determining movements and habitat use; thus, they occupy a variety of habitats depending on the time of year. The presence of other predators is important to wolverine because of their reliance on carrion. Foraging opportunities, including small, medium and large prey animals, insects, berries and bird eggs exist within the immediate project area but are very limited due to the age and structure of forested habitat and lack of winter range carrion.

Denning habitat occurs at relatively high elevations in mature and old growth forests, as well as large-boulder talus fields and mountain cirques. Deep, soft

snow is often used for tunneling and den construction. There is no potential denning habitat within the area of influence of the proposed action.

Unconfirmed evidence from surveys conducted in the winters of 1998/ 1999 and 1999/ 2000 indicates use of the upper Shields River drainage by wolverine. However, their abundance and distribution remains uncertain.

### **Direct/ Indirect/ Cumulative Effects**

#### **Effects Resulting from the Alternative A – Proposed Action with a Gravel Pit On National Forest**

All proposed activities associated with the Shields River Road Upgrade occur along open, existing roads or within an area previously impacted by past timber harvest. Habitat alteration of approximately six acres for the construction of the winter/ spring parking area and gravel pit may alter the habitat of numerous wolverine prey species including small mammals, birds and insects. However, the area is not a substantial contributor to the forage base for wolverine. The amount of acres to be disturbed would not reduce populations of prey species to any measurable degree. The project would have no direct, indirect or cumulative effects to wolverine foraging habitat.

The proposed winter/ spring parking area and gravel pit would not alter or remove any suitable wolverine denning habitat. There is no denning habitat available for this species in the proposed project area of influence due to past habitat alterations from roads and timber harvests, relatively low elevations, and lack of cirque basins and structural diversity. Therefore, the project would have no direct, indirect or cumulative effects to wolverine denning habitat.

The proposed road improvements, construction of the winter/ spring parking area and gravel pit would not cumulatively add to any impacts to wolverine habitat that may have resulted from past timber harvesting, road construction on private lands, or winter recreational activity. Current and anticipated future levels of human recreation use on private and public lands may discourage wolverine presence in high use snowmobile trail and roaded areas in the upper elevations of the drainage away from the proposed project activity. Alternative A would not result in adverse direct, indirect, or cumulative effects on wolverine or adverse modification of its associated foraging or denning habitat.

#### **Effects Resulting from the Alternative B – Proposed Action with a Gravel Pit Not On National Forest**

This alternative would have similar direct, indirect, or cumulative effects as Alternative A. The proposed gravel pit would not be constructed so the

effects of all proposed actions would be less than those described for Alternative A.

### **Effects Resulting from the Alternative C – No Action**

The no action alternative would have no direct, indirect, or cumulative impact on wolverine or their denning or foraging habitat.

### **Boreal Toad and Northern Leopard Frog**

**Indicator:** Effects to the boreal toad and northern leopard frog were addressed by evaluating impacts to wetland habitat directly associated with ground-disturbing work within the project ROW.

#### **Affected Environment**

Approximately 0.086 acres of Palustrine Forested Wetland and 0.383 acres of Palustrine Shrub wetland or a total of 0.469 acres would be impacted by road fill, all within the existing Shields road ROW. In addition, very localized Riverine wetlands occur at the three bridge sites. The Palustrine Shrub wetlands are Corps of Engineers jurisdictional wetlands and will require wetland mitigation of 0.58 acres (1.5 to 1) wetland replacement “in kind” on National Forest lands within the Shields River watershed (see Chapter 3, Issue 1). General habitat types associated with the boreal toad and the northern leopard frog include temporary or permanent ponds or wetlands and riverine/ riparian habitats (Maxell 2000). The wetlands within the ROW of the Shields River Road Upgrade project may be providing habitat for both of these sensitive species.

Boreal toads are found in a variety of habitats including wetlands, forests, woodlands, sagebrush, meadows, and floodplains in the mountains and mountain valleys. In Montana, northern leopard frogs are typically found in riparian habitats or on the prairies near permanent waters without tall dense vegetation (Maxell 2000). However, they range widely into moist meadows, grassy woodlands and even agricultural areas in and adjacent to permanent slow moving or standing water. Adults of both species feed on a variety of invertebrates and may also cannibalize smaller individuals; boreal toads also rely on ground dwelling insects while northern leopard frogs ingest plant matter incidentally.

According to Maxell and others (2003) both voucher and observation records exist for the boreal toad in Meagher County in or near the Crazy Mountains and were reported as common or abundant. Surveys conducted in the 1990’s indicate that the species is still widespread but may have undergone regional population declines. Only one voucher specimen of the northern leopard frog



was recorded in the Crazy Mountain portion of Meagher County (Maxell and others 2003). Widespread declines and/or extirpations have occurred since the 1980's west of the continental divide but numerous healthy populations have been documented on the plains east of the mountains in the 1990's. As a result of these findings the Forest Service listed the northern leopard frog as a sensitive species in all Region 1 Forests (Maxell 2000). In addition, both the boreal toad and the northern leopard frog are classified as a Species of Special Concern by the Montana Natural Heritage Program and the Montana Fish, Wildlife, and Parks.

Surveys conducted in 1999 in the Crazy Mountains found the Columbia spotted frog (*Rana luteiventris*), but no populations of boreal toad or northern leopard frog were located (Atkinson 2000). There are no known occurrences of these species in the project area but their presence is possible.

### **Direct/ Indirect/ Cumulative Effects**

#### **Effects Resulting from the Alternative A – Proposed Action with a Gravel Pit On National Forest**

The project would have short-term effects through the direct loss of habitat and potential mortality. The road treatments would have temporary sediment increases during road regrading, ditch replacement, and culvert replacement. The rest of the road reconstruction impacts are on relatively flat areas that are not hydrologically connected to the Shields River and would not increase sediment yields in those Riverine wetlands associated with the Shields River.

The placement of aggregate on the road surface would increase infiltration and decrease erosion from the road surface. Therefore, long-term effects of the road upgrade would include reducing sediment, which would have a beneficial affect to the affected wetlands in general, despite the direct loss in size.

The wetland mitigation requirement and subsequent wetland habitat establishment would ameliorate effects of habitat loss long-term. The creation of wetland on National Forest would result in a slight net increase of wetland/ riparian habitat (Corps of Engineers would require "replacement in kind" (1.5 to 1) wetland replacement with no net loss of wetlands or 0.58 acres on National Forest lands in the Shields River watershed).

There would be no additional cumulative effects to amphibians from past, present, or future actions such as the Gallatin National Forest Travel Management Plan effort, Bennett Creek Land Exchange, and the Sunlight Trail projects, identified as reasonably foreseeable projects in the project vicinity. The Upper Shields Grazing Allotment Revisions may have cumulative effects based on the degree to which the proposal would change

riparian grazing practices in the future although these effects are expected to be beneficial.

Monitoring would take place during breeding season to determine presence of either species prior to construction activities. Any mitigation needs would be determined based on survey findings and may include translocation attempts.

### **Effects Resulting from the Alternative B – Proposed Action with a Gravel Pit Not On National Forest**

This alternative would have similar effects as Alternative A as there is no difference in alternatives on the road reconstruction portion of the proposal.

### **Effects Resulting from the Alternative C – No Action**

Wetland location and distribution within the project ROW would remain as they currently exist. Alternative C would have no direct, indirect or cumulative effects on boreal toad or northern leopard frog individuals or habitat.

### **Biological Evaluation Determination: Wolverine, Boreal Toad, and Northern Leopard Frog**

Direct, indirect or cumulative impacts to denning and foraging habitat associated with this proposal would have “no impact” on wolverines. Due to current habitat conditions, implementation of the action alternatives would not reduce any existing effective or available foraging or denning habitat for the wolverine. The action alternatives do not propose any new access into currently unroaded areas. Therefore, alteration of habitat or displacement is not an issue. Direct, indirect or cumulative impacts associated with this proposal “may impact individuals or habitat, but will not likely contribute to a trend towards Federal listing or cause a loss of viability to the population or species” the boreal toad and the northern leopard frog or their habitat. The project would have short-term effects but long-term these would be ameliorated by the wetland mitigation requirement and subsequent wetland habitat establishment. Monitoring would take place during breeding season to determine presence of either species prior to construction activities. Any mitigation needs would be determined based on survey findings.

## **Elk**

**Indicator:** Effects to elk were addressed by evaluating project impacts to elk cover and forage availability. A habitat effectiveness index (HEI) was not used to evaluate road density impacts on elk as no changes in road density would occur. There are no special features such as wet drainages where wallows may exist, mineral licks, saddles, riparian corridors, potholes, wet

meadow and shadowed draws present in the areas proposed for winter/spring parking or gravel pit so these were not evaluated.

## **Affected Environment**

The Forest Plan has designated elk as a MIS for big game habitat under the premise that by managing for productive elk habitat, we will be managing for most big game species. Elk are somewhat common throughout the Shields River Road Upgrade project area. High elevations provide spring, summer and fall range; lower elevations on south and west slopes where snow levels are less than 18 to 24 inches (mostly on private lands in the vicinity of this project) provide winter range. Elk habitat was evaluated in terms of providing cover and forage needs.

There are two basic types of cover required for big game: thermal and hiding cover. Thermal cover aids an animal in maintaining body heat under winter conditions. Quality thermal cover for elk is defined as coniferous trees at least 40 feet in height, with an average crown closure greater than or equal to 70 percent (Forest Plan Amendment No. 14: Big Game Cover Definitions). Hiding cover is typically any vegetation capable of effectively hiding 90 percent of a big game animal from view within 200 feet used for security or escape from danger (Forest Plan Amendment No. 14: Big Game Cover Definitions) of predators (man, wolves).

The winter/ spring parking area and gravel pit site do not provide quality thermal cover as the crown closure is somewhat less than 70% and the trees are less than 40 feet in height. This area has reestablished to provide marginal hiding cover such that the second-growth lodgepole effectively serves as hiding cover in patches.

Elk graze on grasses and other herbaceous plants in summer, and browse on woody plants during late fall, winter and spring. The project area is currently providing foraging habitat in the forested understory due to past timber management practices. This foraging opportunity decreases with the ongoing growth of the second-growth lodgepole pine.

## **Direct/ Indirect/ Cumulative Effects**

### **Effects Resulting from the Alternative A – Proposed Action with a Gravel Pit On National Forest**

Although Alternative A would involve the removal of trees in the proposed winter/ spring parking and gravel pit area, it would not result in a measurable loss of hiding cover. These areas are within previously harvested timber stands that were clearcut and are variable in their ability to provide cover.

Road improvements associated with this alternative would occur on existing roads and would not expand into unroaded areas.

Proposed activities within the analysis area are not expected to have a measurable impact on forage availability of the general area. Removal of approximately six acres of trees to construct a winter/ spring parking area and gravel pit would not provide any additional forage but would not substantially reduce it either. Foraging habitat within the project vicinity would still be available to elk in Sunlight Creek, greater Shields drainage and on adjacent state and private land. Therefore the project would have no direct, indirect or cumulative effects to elk hiding or thermal cover or foraging areas.

### **Effects Resulting from the Alternative B – Proposed Action with a Gravel Pit Not On National Forest**

This alternative would have similar effects, but to a lesser degree, as Alternative A as it does not include a gravel pit proposal on National Forest. The associated road improvements and winter/ spring parking area would not remove cover or foraging habitat to a measurable degree.

### **Effects Resulting from the Alternative C – No Action**

Cover and forage values of the project area would remain at existing conditions. Alternative C would have no direct, indirect or cumulative effects on elk existing cover conditions or foraging habitat.

## **Other Wildlife Species of Concern**

**Indicator:** Effects to migratory bird species were addressed by evaluating impacts to nesting and foraging habitat for those species potentially affected by the proposed action.

### **Affected Environment**

The project is located in an area that has been heavily managed for timber production in the past. Clear cutting was used extensively as a harvest method, which considerably reduced overall snag availability in the project vicinity. Aside from fire and other natural disturbance processes, older forest typically provides the best habitat for snag-dependent species. In the project area of influence, there is neither burned habitat or older forests to create snags. Nesting habitat is limited to the lack of structural and species diversity, single age classes of overstory trees, and minimal understory cover and structure. Foraging habitat is also limited for these reasons. Ground nesting birds may exist where cover and forage are adequate.

The project area is most likely used by a low diversity of generalist and/ or common bird species such as the American robin, back-billed magpie, common raven, gray jay, Townsend's solitaire, and dark-eyed junco. If these species are present in enough numbers, predatory raptors such as red-tailed hawk, sharp-shinned hawk, or Cooper's hawk, may use the project area of influence for foraging. There are no known occurrences of any special species of concern.

The immediate area of influence of the road reconstruction also includes wetland/ riparian habitat that would be impacted by the road reconstruction. However, any direct loss of habitat would be mitigated for through the creation of wetland on National Forest resulting in a slight net increase of wetland/ riparian habitat (Corps of Engineers would require "replacement in kind" (1.5 to 1) wetland replacement with no net loss of wetlands or 0.58 acres on National Forest lands in the Shields River watershed).

### **Direct/ Indirect/ Cumulative Effects**

#### **Effects Resulting from the Alternative A – Proposed Action with a Gravel Pit On National Forest**

Direct effects of the proposed project would alter six acres of nesting habitat for ground, shrub and tree nesting species that might be present in the analysis area. Effects to species would be permanent, as these areas would basically be converted for their primary purposes. The wetland mitigation requirement would directly affect bird species in the short-term until the mitigation is complete and vegetation matures at this new wetland site. Long-term effects would be immeasurable with the slight net increase of replaced wetlands on National Forest land.

There would be no additional cumulative effects to nesting birds from past, present, or future actions such as the Gallatin National Forest Travel Management Plan effort, Bennett Creek Land Exchange, and the Sunlight Trail projects, identified as reasonably foreseeable projects in the project vicinity. The Upper Shields Grazing Allotment Revisions may have cumulative effects based on the degree to which the proposal would change grazing practices in the future although these effects are expected to be beneficial.

#### **Effects Resulting from the Alternative B – Proposed Action with a Gravel Pit Not On National Forest**

This alternative would have similar effects, but to a lesser degree, as Alternative A. The associated road improvements and winter/ spring parking area would not impact nesting or foraging habitat to a measurable degree.

## **Effects Resulting from the Alternative C – No Action**

Cover and forage values of the project area would remain at existing conditions. Alternative C would have no direct, indirect or cumulative effects on nesting or foraging habitat of migratory bird species.

## **Heritage Resources**

Ground disturbance associated with the proposed road improvements may damage or destroy cultural resources.

**Indicator:** Identify any existing sites within the area subject to ground disturbance. Evaluate existing sites and predict effects of project activity.

### **Concern**

Damage to or loss of cultural resources.

### **Scale of Analysis**

The analysis area for evaluating effects of this project on cultural resources includes the full extent of disturbed soils, including areas disturbed during the course of construction.

## **Affected Environment**

Approximately 5.3 miles of roadside would be affected. Up to 20 ft. of the shoulder of the road on both sides could be disturbed during construction process. Nearly all of this area is on private land. In addition, areas along the Shields River could also have areas of vegetation removed from activities associated with the bridge replacement. If a gravel pit is constructed off of the Sunlight Road, approximately 3 to 5 five acres would be affected at that site.

Heritage resources are not present within the existing right-of-way of the Shields River Road and the Deep Creek Bridge. The locations of the proposed parking area and the gravel pit in Section 35, T5N R10E, MPM were examined for cultural resources during the summer of 2003.

No historic or prehistoric sites were recorded.

### **Direct, Indirect and Cumulative Effects:**

None of the alternatives will have any direct, indirect, or cumulative effects on cultural resources.

## **Energy Efficiency**

Construction practices differ in their consumption of energy.

**Indicator:** Fuel would be expended while the road surface is improved, when aggregate is hauled and placed and while grading and maintaining the road.

**Concern:** Use of energy.

### **Scale of Analysis**

The analysis will consider the relative volume of fuel consumed during road improvement and future maintenance.

## **Affected Environment**

Consumption of fossil fuel reserves.

### **Direct, Indirect and Cumulative Effects**

Alternatives A and B would require the same quantity of fuel for roadway shaping improvement. Fuel consumption to produce aggregate would be similar whether the aggregate came from a commercial source or from National Forest land. The volume of fuel consumed while hauling aggregate would be proportionate to the haul distance. It is likely haul; from a commercial source (Alternative B) would be at least three times as far as from the identified source on National Forest (Alternative A). The haul distance with Alternative B would include not only the material needed for the proposed road improvements but also the aggregate needed for future maintenance of road on National Forest land in the Shields River drainage.

The energy consumed to process the aggregate and pavement would be similar with either action alternative.

Alternative C, the No Action Alternative, would not create a need for energy expenditure over and above what already occurs with regular, periodic road maintenance.

## **Cost Effectiveness**

Alternative A calls for developing a gravel pit on National Forest land to meet the immediate needs of the project and to supply suitable material for future maintenance of Forest Service roads in the Shields River basin. Alternative B would rely on commercial sources of gravel, now and in the future. Both

alternatives provide the Forest Service with a supply of gravel but at differing short and long-term costs.

**Indicator:** The anticipated cost per unit of suitable aggregate supplied.

**Concern:** A decision to implement either action alternative may commit the Forest Service to a level of expenditure that is both unnecessary and avoidable. While other factors, including environmental concerns will be considered, a determination of which action alternative is expected to provide suitable surfacing and construction material at the least cost to the government is pertinent to the decision to be made.

**Scale of Analysis:** Cost of production, haul and replacement of aggregate.

**Affected Environment:** Current costs for fuel, labor and equipment time.

**Direct, Indirect and Cumulative Effects:**

Alternative A - Project estimate for construction, based on preliminary designs, would be between \$1,500,000 and \$1,900,000. This assumes the use of the designated material source – Pit #2. (See Project File) This could easily vary by +/- 30% as the design decisions become more final.

Alternative B - An additional \$200,000 to \$300,000 would be required if the materials were manufactured and hauled from the commercial pit near Clyde Park. This assumes the quality and extent are possible in that location. (See Project File) This represents a 12% increase over Alternative A. Increases come from additional truck hauling costs and assume a \$2 per Cubic Yard royalty charge on private land.

Indirect and cumulative effects are not applicable to an assessment of current costs.

**Compatibility with current land uses during and after construction:**

Construction practices, particularly the need to relocate fence lines and changes in road alignment can create conditions that add to the cost and difficulty of controlling livestock. Access to private rangelands may be interrupted. When construction is complete, there is a risk that the upgraded road will modify or possibly interfere with historic means of access to private rangelands.

**Indicator:** Degree of disruption, near and long-term, of traditional uses occurring on private lands adjacent to the Shields River Road.

**Concern:** Construction practices and the improved road may contribute additional costs for livestock management.



**Scale of Analysis:**

During scoping, ranchers who depend on the Shields River Road for access to their properties expressed concern that construction activities, which are expected to continue until fall, 2006, will interfere with management of private rangelands. There was an additional concern that the final design of the road would not provide for adequate access to rangelands. The scope of the analysis includes these properties.

**Affected Environment:**

The affected environment includes the grasslands on private land on either side of the Shields River Road, along with the fence lines, gates and approaches that provide access to these grasslands. These properties have traditionally been used for grazing livestock and cutting hay.

**Direct, Indirect and Cumulative Effects:**

The following mitigation measures will be incorporated into the construction contract to limit the impact to ranch operations during construction:

1. Affected private landowners will be notified in advance of any changes in the status or location of existing fence lines. Proposals to temporarily relocate a fence line will be coordinated with the affected landowner.
2. The road contractor will promptly repair fences needed at the time that have been damaged by construction. Repair will be completed by the end of the current workday. The road contractor will maintain livestock affected by the fence(s) in their current pasture during construction activities
3. The road contractor will check needed fence lines in the vicinity of the day's activities before resuming construction. If livestock are found in the road corridor, they will be directed to the appropriate secure pasture before resuming construction. The affected landowners will be notified.
4. Historic approaches needed to access private land will be maintained in a serviceable condition, to the extent practicable. In the event an approach must be temporarily relocated, the adjacent fence line will be modified to assure needed access to range lands. Temporary and permanent changes in the location and serviceability of existing approaches made necessary by construction will be coordinated with the affected landowner.
5. Use of the Shields River Road and the lower 0.2-mile of the Sunlight Road will be subject to occasional interruption. Delays would not exceed twenty

minutes. Longer delays would be expected while the contractor is working on bridge stringers or major culverts on the Shields River Road. Advanced notice of major delays will be provided to landowners. Flagmen could be used as needed to alert drivers of the need for extra care when traveling through the construction zone.

The following mitigation measures will be incorporated into the design of the improved road:

1. Provide for signing to encourage the public to stay on the designated road where the road crosses private land.
2. Changes in road alignment and location of road cuts and fills will be designed within the road easements across private land.
3. The design will identify a final, post-construction location of all fence lines impacted by the proposed road upgrade. Changes in the number and location of gates and access will be coordinated with the affected landowner.
4. As a minimum, replacement fence lines and gates will be constructed to a standard at least equal to the condition of the fence at the time of construction.

With these mitigation measures in place the direct effects of road construction on access to adjacent private rangelands should be limited to occasional, 20 minute delays. The time lost to delay will be compounded by the need to travel more slowly over a roughened surface during construction. No indirect or cumulative effects of road construction on access to private rangelands are anticipated.

The mitigation measures to be integrated into the design of the improved road are adequate to prevent adverse direct effects on access to private rangelands adjacent to the Shields River Road. In addition, these measures are expected to provide for traditional uses of these rangelands. The improved road will not have an adverse direct, indirect or cumulative effect on management of private rangelands.